

Punching Up the Juice With Proactive Audio

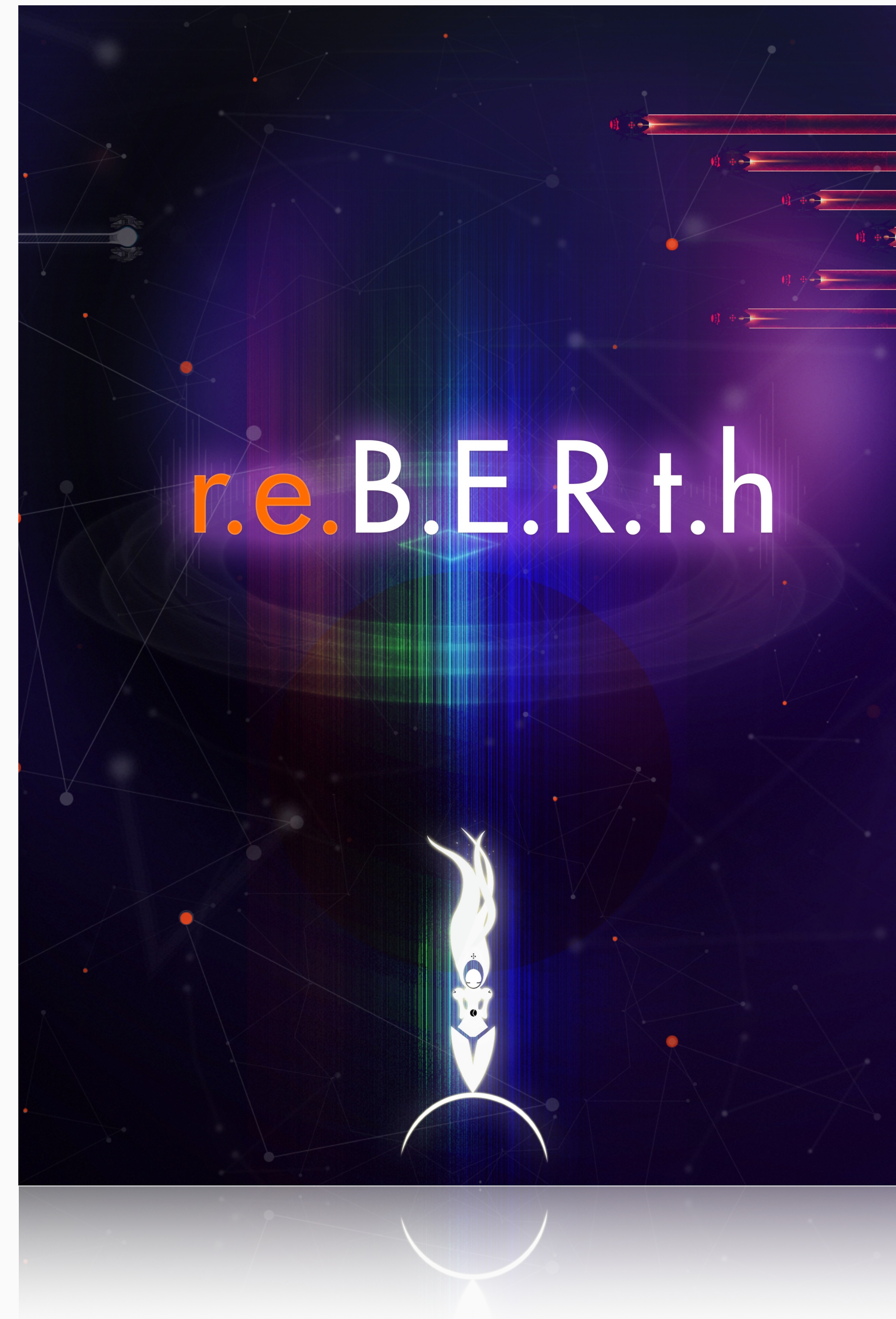
Eric Robinson

Lead Programmer • Designer



Recent History



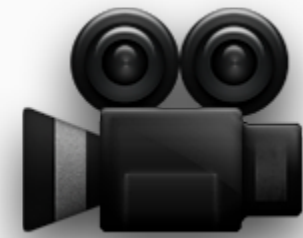






Visual

Camera Shake



Hover/Focus



Hit React



Tweening

In

Out

In/Out

Particles

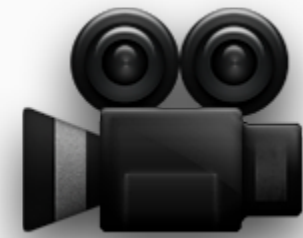
Aural

Sound Effects

Music

Visual

Camera Shake



Hover/Focus



Hit React



Tweening

In

Out

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Particles

Aural

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Music

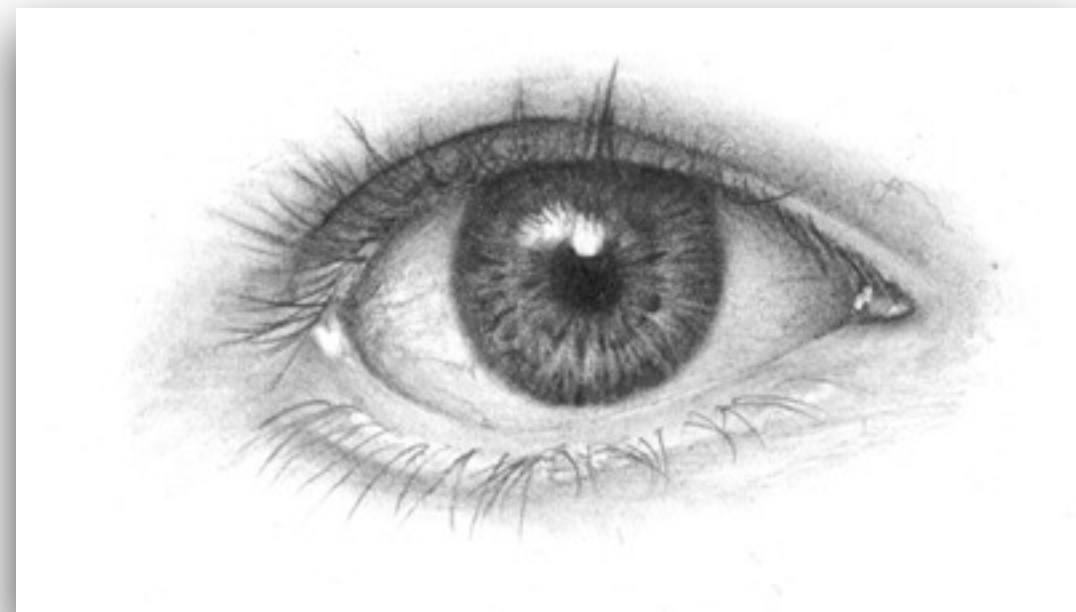


BASIC ELEMENTS OF A VIDEOGAME

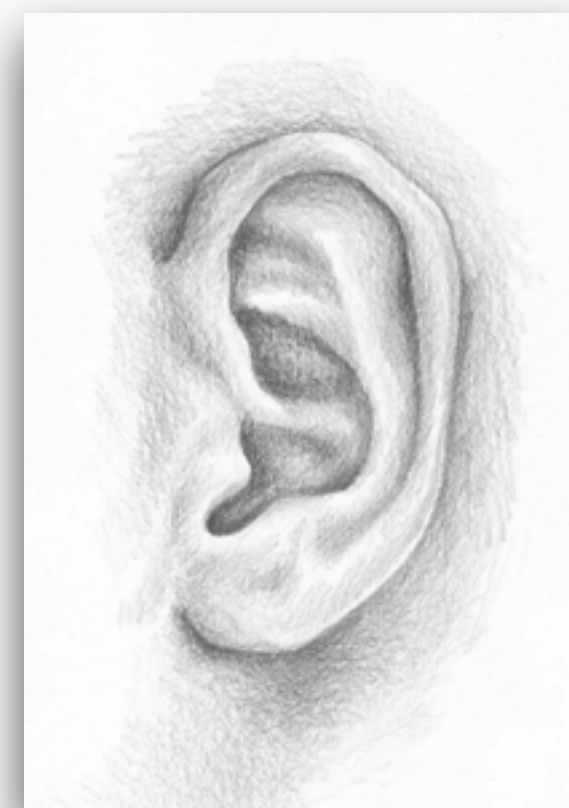
- 1) Codes
- 2) Graphics
- 3) Music
- 4) UI
- 5) SFX
- 6) Writing







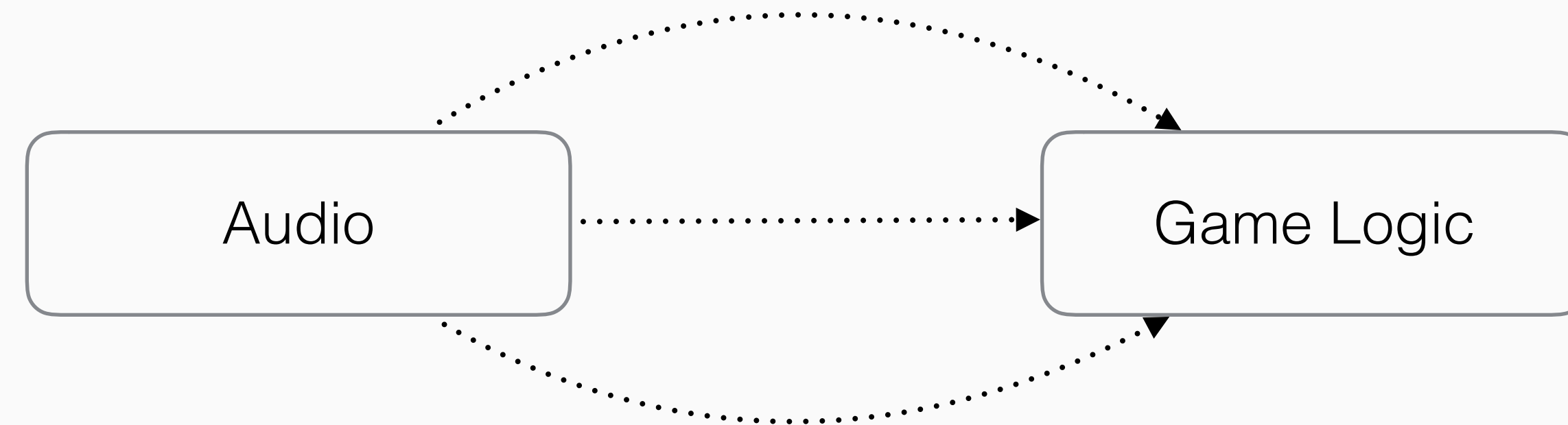
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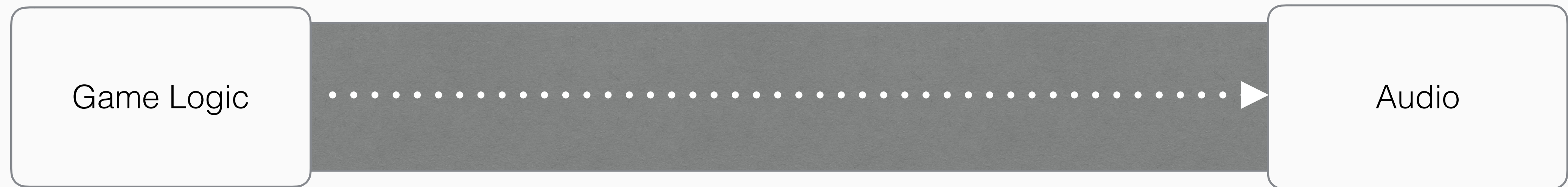
Proactive Audio

Proactive Audio



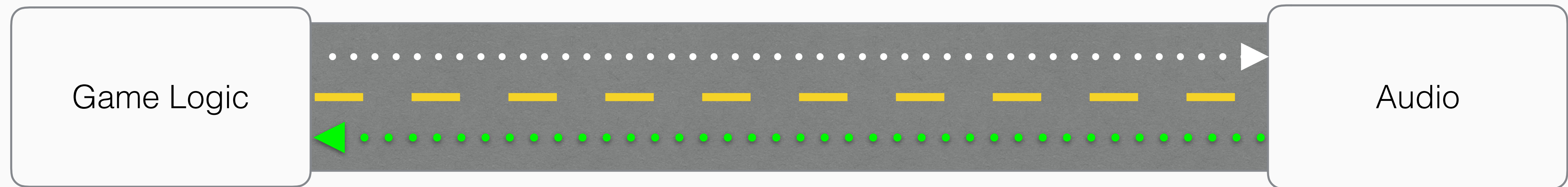
Audio-driven game events

Proactive Audio



Game-driven audio events

Proactive Audio



Audio-driven game events

Game-driven audio events

Proactive Audio Techniques

Music Powered Animations

Audio Timeline Events

Speaker Effects



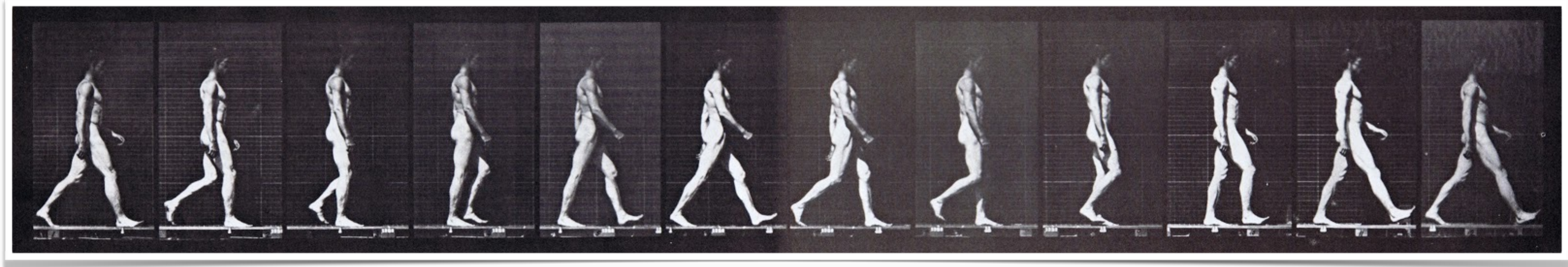
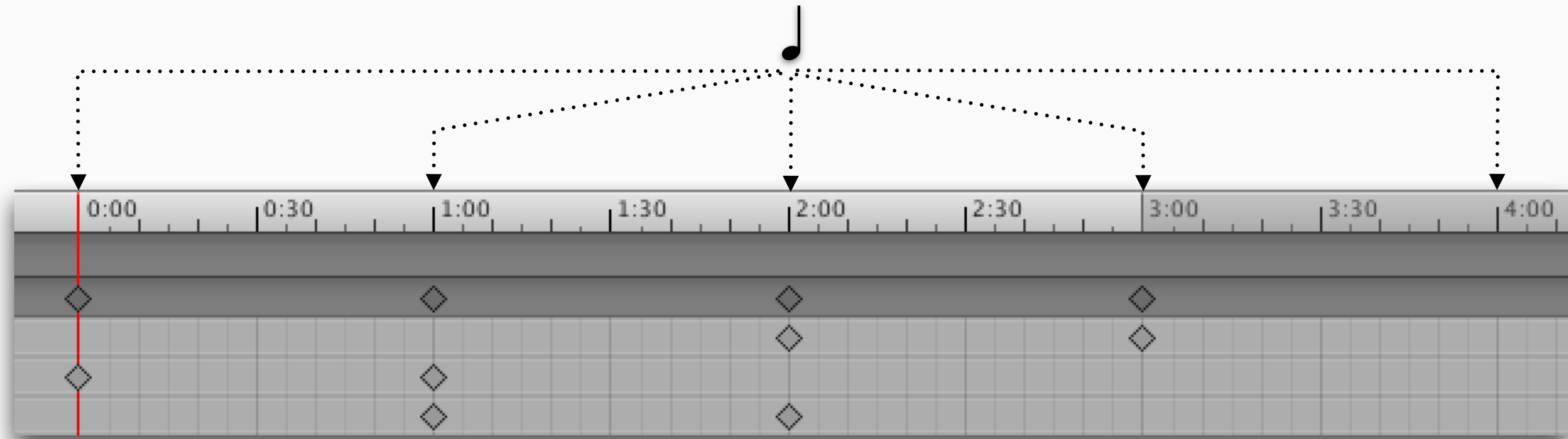


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deltaTime in seconds

deltaTime in beats



How To: Music Powered Animations

Authoring

Get music BPM!

Start

Play Music!

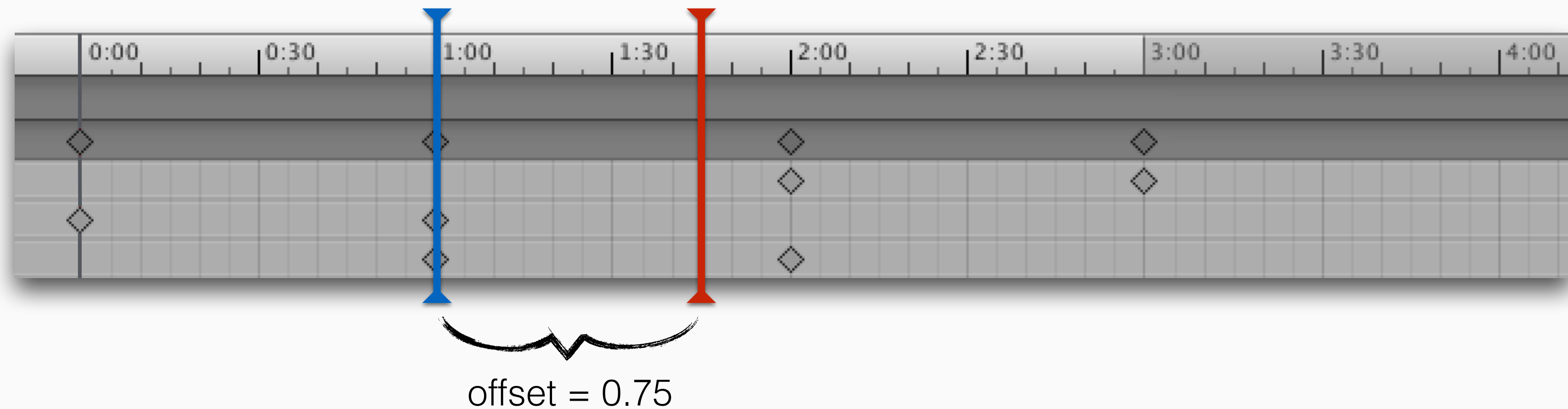
Tick/Update

```
musicTime = MediaPlayer.GetMusicTime(); // In Seconds
beatTime = musicTime * (BPM / 60);      // To Beats

UpdateAnimations(lastBeatTime - beatTime); // Pump animations

lastBeatTime = beatTime;                // Prep next frame
```

Quick Note!



- 1) `anim.Play(offsetTime)`
- 2) `anim.Play(beatTime - Floor(beatTime))`
- 3) `anim.Play(1.75 - 1)`
- 4) `anim.Play(0.75)`

Demo Time

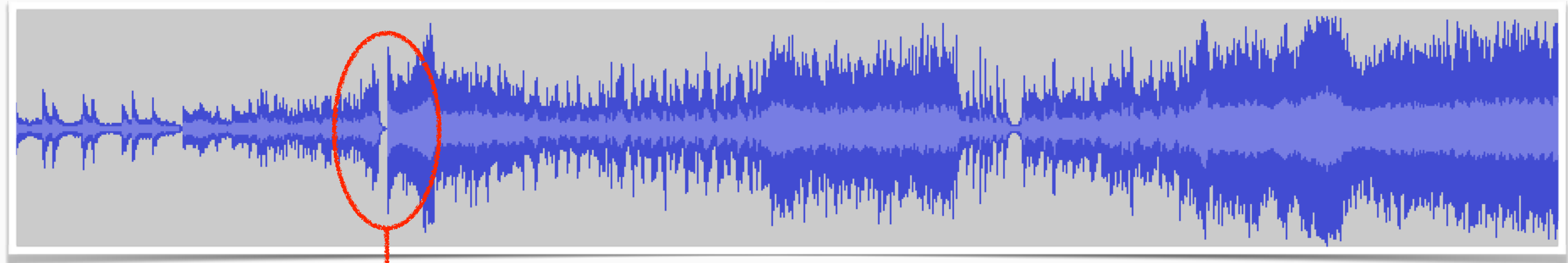
Proactive Audio Techniques

Music Powered Animations

Audio Timeline Events

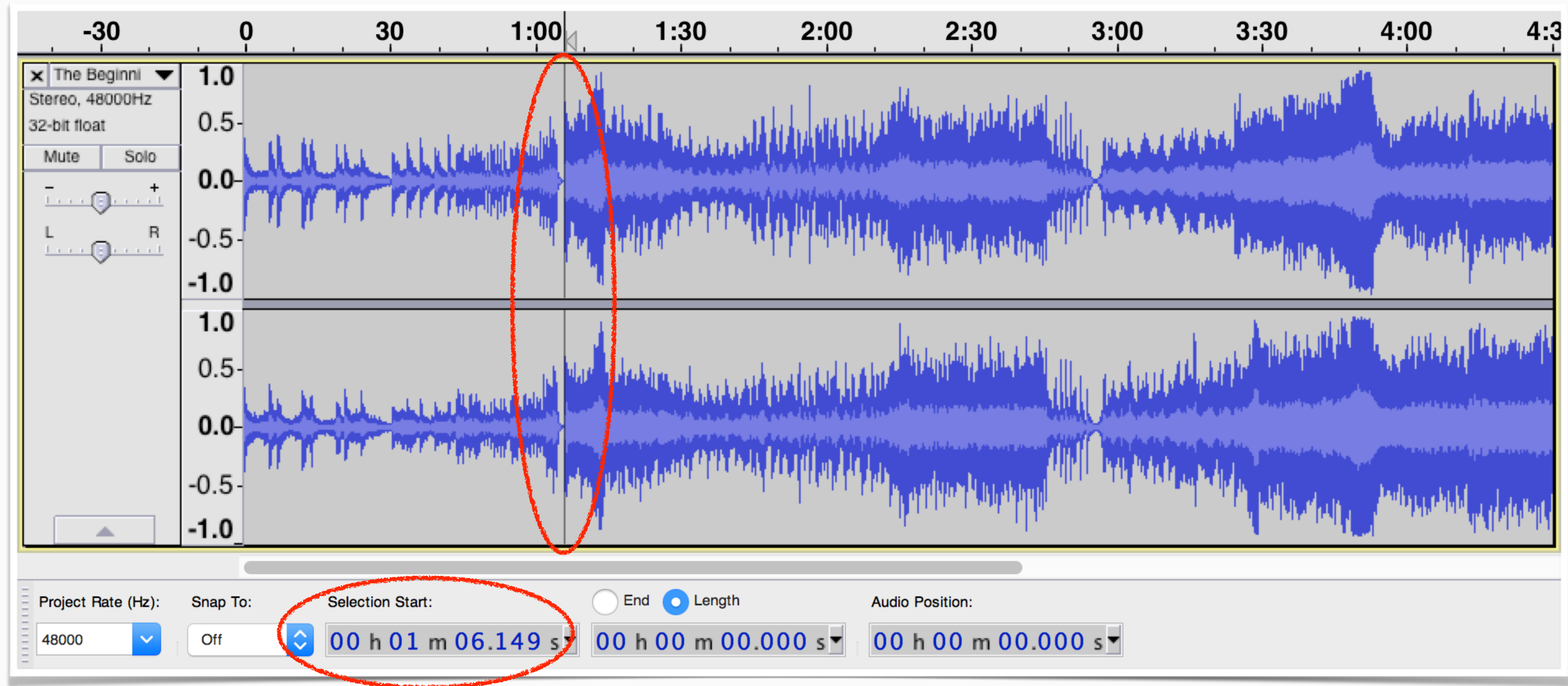
Speaker Effects

Audio is a Timeline



Beat drop at 35.82s

Your Friend Audacity



How To: Audio Timeline Events

Authoring

Note times of interest along timeline!

Start

Play Audio!

Tick/Update

```
audioTime = AudioPlayer.GetAudioTime();    // In Seconds
eventTime = audioEvents[nextEventIndex];    // In Seconds

if (audioTime >= eventTime)
{
    DoSomethingAwesome();
    nextEventIndex++;
}
```

Demo Time

Proactive Audio Techniques

Music Powered Animations

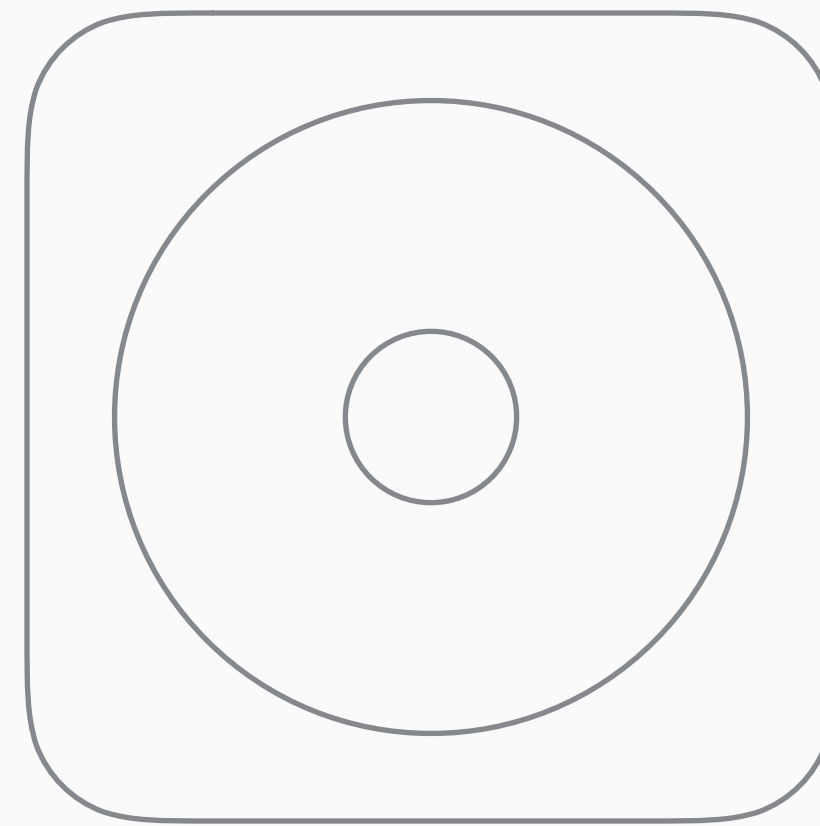
Audio Timeline Events

Speaker Effects

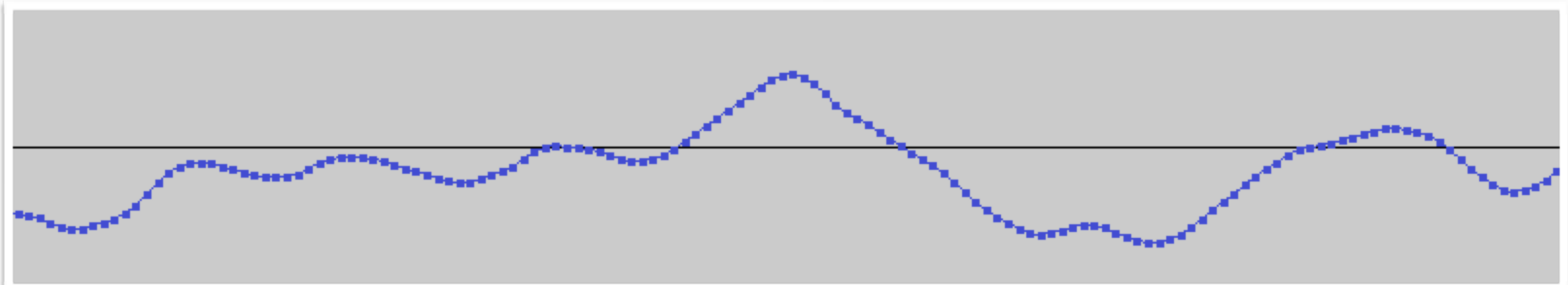
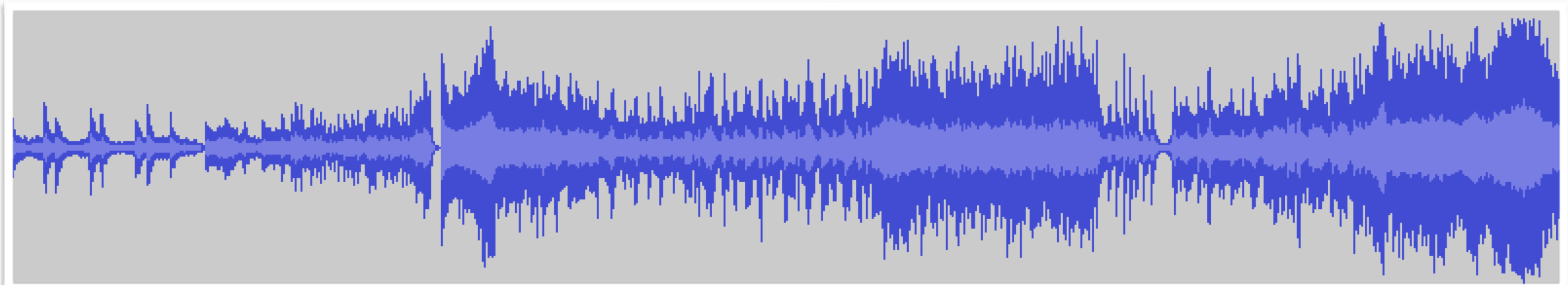
Score

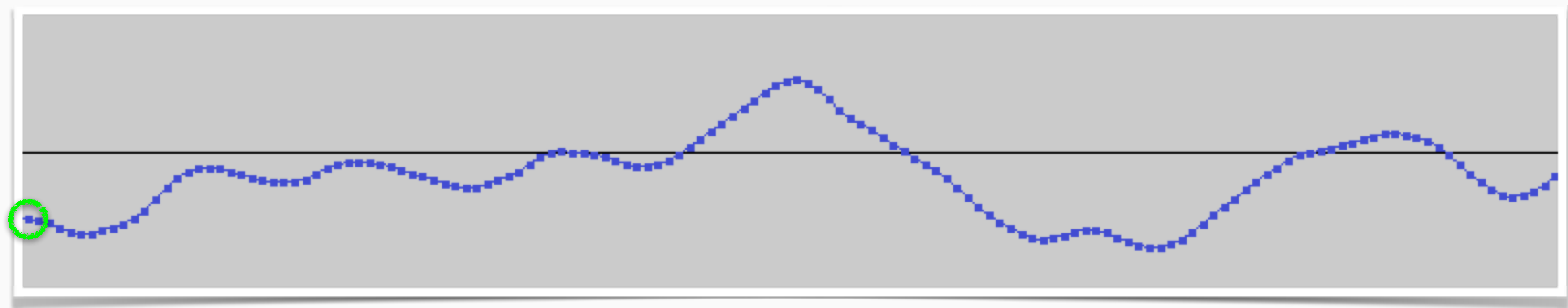
10,323,218,400

1-Up 1-Up 1-Up



Tap Into Audio Data





How To: Speaker Effects

Authoring

Get Audio!

Start

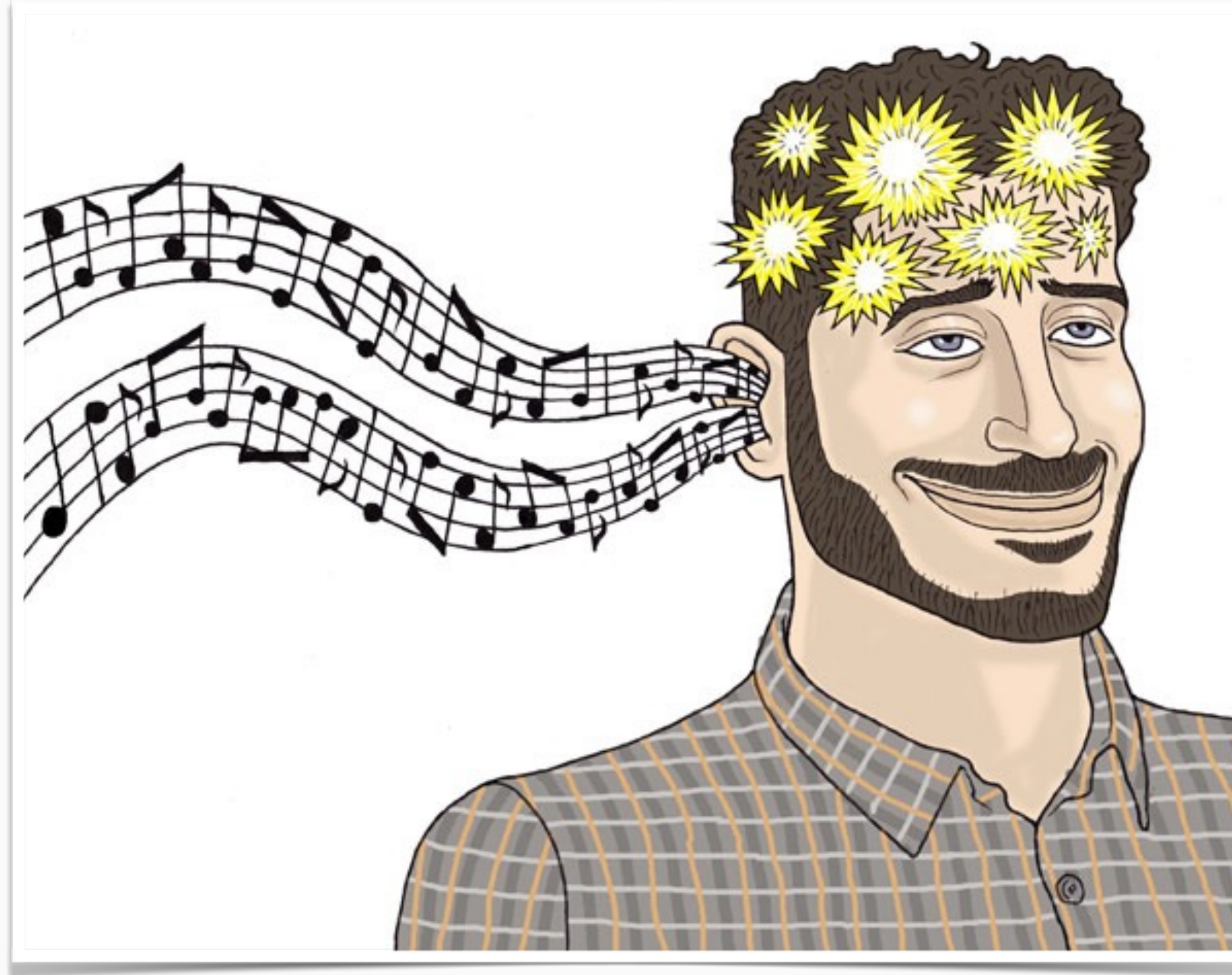
Play Audio!

Tick/Update

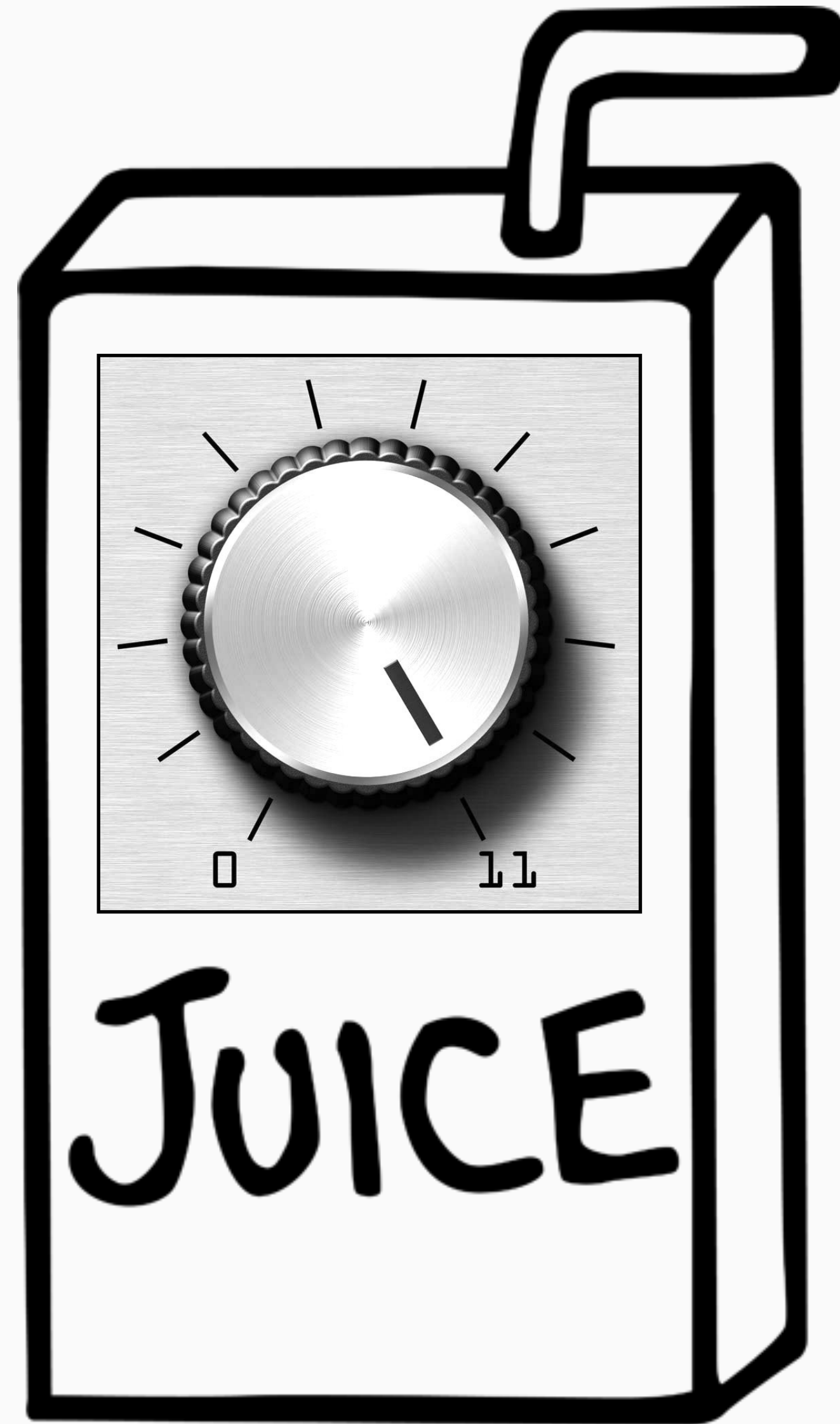
```
sample = AudioPlayer.GetLatestSample();  
speakerScale = 1 + (sample * 0.15);           // Scale  $\pm 15\%$ .  
SetScale(speakerScale);
```

Demo Time

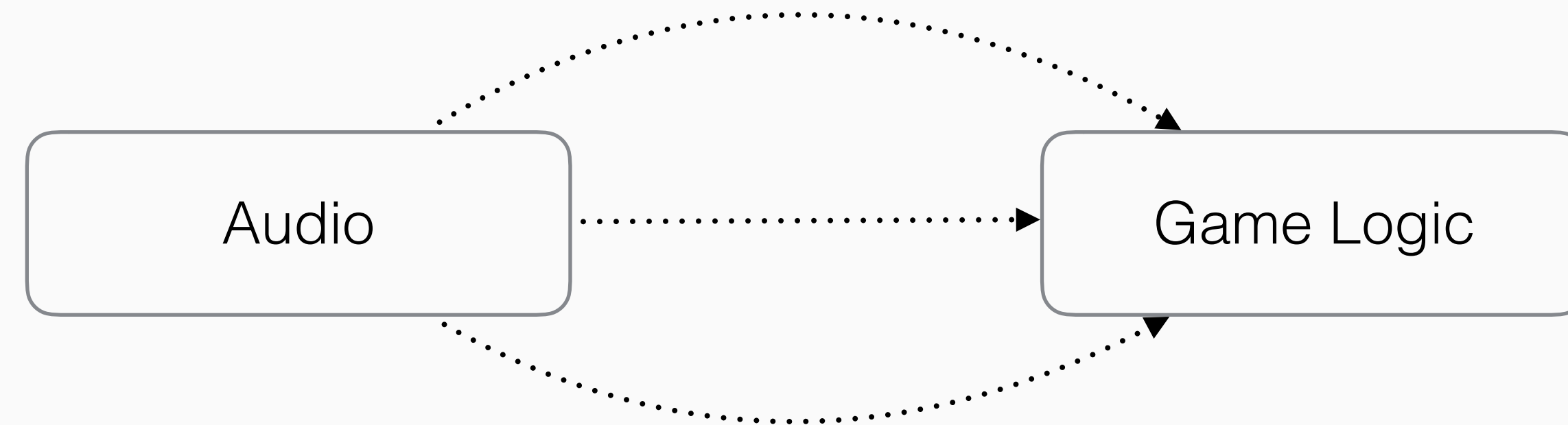
Wrap It Up







Proactive Audio



Audio-driven game events



Middleware can help! For Unity, at least...

Runtime

- Visualizer Studio
- Audio Visualizer
- Beat Detection (actual title)

Edit Time

- Koreographer*
- Dark ACE

Questions?

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Thanks!

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